

# Modeling cracked-section properties

**Cracked-section properties** are not automatically implemented in [response-spectrum](#) or any other type of analysis, though they may be manually input through any one of the following methods:

1. Create two separate models, one with uncracked properties and one with cracked-section properties.
2. Use frame [property modifiers](#) as follows:
  - Develop the model using uncracked properties and analyze the system for strength-based [load cases](#).
  - Model the cracked sections by assigning [frame](#) property modifiers through [interactive database editing](#), available through Edit > Interactive Database Editing > Model Definition > Frame Assignments > Frame Items Assignments > Table: Frame Property Modifiers.
  - Run response-spectrum or another type of analysis for the modified model.
3. Use [staged-construction](#) analysis with named property sets to analyze different model configurations, described as follows:
  - Develop the model using uncracked properties and analyze the system for strength-based load cases.
  - Use staged construction to create a different model configuration with cracked-section properties.
  - Analyze the cracked model as follows:
    - Define frame property modifiers for the cracked sections through Define > Name Property Sets > Frame Modifiers.
    - Define a single staged-construction load case with two [operations](#). Use the first operation to select Add Structure, then use the second to model cracked-section properties through Change Modifiers.
    - Define a [modal](#) load case which uses the stiffness at the end of the previously defined staged-construction load case, where cracked-section properties are applied.
    - Define a response-spectrum or another type of load case based on the modal case previously defined.

This method is convenient because it does not require modification between uncracked and cracked models.

Note that staged-construction analysis is only available with the [Ultimate](#) licensing level.

## See Also

- [Moment curvature and cracked moment of inertia](#) test problem
- [SAFE Cracking](#) section
- [Cracking](#) article
- [Modeling concrete cracked section properties for building analysis](#)